

LOISETTEA AMPHICTENA, NEW GENUS,
NEW SPECIES, FROM THE SUBLITTORAL OF
NORTHWESTERN AUSTRALIA
(ECHINODERMATA: HOLOTHUROIDEA)

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Abstract.—*Loisettea*, new genus, differs from others in the dendrochirotid subfamily Colochirinae in possessing body wall ossicles in the form of deep complex cups, buttons, and large scales. *Loisettea amphictena*, new species, is distinctive in possessing conspicuous ventrolateral papillae; it occurs off the coast of northwestern Australia. *Colochirus gazellae* Lampert, from Sumbawa in the Sunda Islands and from northwestern Australia, is also referred to the new genus.

Over the past 25 years, largely through the dedicated collecting of Raymond W. George, Barry R. Wilson, and Loisette M. Marsh, the echinoderms of the Western Australian region, from the shore to upper bathyal depths, have become increasingly well known. The regional collections of the Western Australian Museum are now extensive, and include numerous echinoderms which represent new taxa, or are new records for the region. During our separate and joint investigations of Australian holothurians, we found that both the Australian Museum (AM) and the Western Australian Museum (WAM) collections contained specimens of a unique and distinctive holothurian—this new genus and species is described below.

We thank Loisette M. Marsh of the Western Australian Museum for making specimens and a photograph of this interesting animal available to us. John Miller, Harbor Branch Foundation, Inc., Florida, kindly and patiently led David L. Pawson through SEM preparation and photography of the ossicles, and reviewed the draft manuscript of this paper. Partial support for David L. Pawson was provided by Smithsonian Fluid Research Funds. Sequence of authors of the paper was decided by the toss of a coin.

Order Dendrochirotida
Family Cucumariidae Ludwig, 1894
Subfamily Colochirinae Panning, 1949
Loisettea, new genus

Diagnosis.—Tentacles 10, 2 ventral tentacles smaller than others. Calcareous ring with undulating posterior margin, lacking posterior projections. Body wall thick, brittle, packed with ossicles. Ventral radii with tube feet in zigzag rows, dorsal radii with single rows of widely spaced feet; smaller feet scattered in dorsal and ventral interradii. Ventrolateral and dorsal papillae present or absent. Ossicles lenticular plates or scales, knobbed buttons and deep complex cups.

Type-species.—*Loisettea amphictena*, new species.

Other species included.—*Colochirus gazellae* Lampert, 1889.

Distribution.—Both species occur off the northwestern coast of Australia; *C. gazellae* is also known from Sumbawa, Sunda Islands.

Etymology.—The genus-name is of feminine gender. We take great pleasure in naming the genus in honor of Loisetete M. Marsh of the Western Australian Museum, Perth, who has contributed so much to our knowledge of Australian echinoderms, and who is a very good friend and colleague to both of us. The species-name is derived from the Greek *amphi*—both sides or double, and *ktenos*—a comb, in reference to the comb-like pattern of ventrolateral papillae in this species.

Remarks.—Within the Subfamily Colochirinae, some species in the genera *Aslia* Rowe, 1970, *Pentacta* Goldfuss, 1820, and *Trachythyone* Studer, 1876, possess deep baskets or cups in the body wall. The new genus diagnosed here differs from *Aslia* species in the disposition of the tube feet and in ossicle form, ossicles of *Aslia* comprising buttons and baskets with no evidence of lenticular plates. Body wall cups of *Pentacta* are generally shallow and simple; in *P. anceps* (Selenka) the cups are deep, but the body wall is thinner and softer than in *Loisettea*. Also, the ossicles of *P. anceps* include delicate hollow spheres, but lack lenticular plates. *Trachythyone* species possess smooth plates, a characteristic that immediately separates that genus from *Loisettea*.

Panning (1971) included *Colochirus gazellae* Lampert and *C. dispar* Lampert in the predominantly western Atlantic genus *Thyonella*; both species occur in northwest Australia, and the latter species is also known from the Somali Coast (Clark and Rowe 1971). These species differ from others in *Thyonella* in the form of the ossicles and in distribution of the tube feet. We believe that *C. gazellae* is congeneric with the new species described below, and we transfer it to the genus *Loisettea* herein. *Colochirus dispar* is provisionally referred to the genus *Pentacta* since in our opinion it is at least congeneric with *P. australis* (Ludwig).

Key to species of *Loisettea*, new genus

1. Conspicuous ventrolateral papillae present *amphictena*, new species
- No conspicuous ventrolateral papillae *gazellae* Lampert

Loisettea amphictena, new species

Figs. 1–3

Diagnosis.—Conspicuous ventrolateral papillae present.

Material examined.—HOLOTYPE: Australian Museum J1427, 17°38'S, 121°27'E, 78 m, 16 Jun 1980, collected by R. B. Martin on CSIRO *Soela*. PARATYPES: Australian Museum: J14283, 19°36'S, 118°37'E, 36 m, 4 Jun 1980, R. B. Martin on CSIRO *Soela*, 1 specimen; J14288, Timor Sea, 13°11'S, 129°43'E to 13°09'S, 129°43'E, 34–38 m, 7 Jul 1979, 1 specimen. Western Australian Museum: Catalogue No. 54-63, 36 miles SW of Adele Island, northwest Australia, 72 m, 17 Oct 1962, dredged by R. W. George on *Davena*, 1 specimen; 70-63, 3–4 miles off East Delambre Island, Dampier Archipelago, 18 m, 5 Jun 1960, rocky, B. R. Wilson on *Davena*, 1 specimen; 96-63, same data as 70-63, 1 specimen; 330-71, off Carnavon, Western Australia, Jul–Sep 1967, W. and W. Poole on *Bluefin*, 1 specimen; 332-71, Blocks 2–6, Shark Bay, Western Australia, Aug 1965,

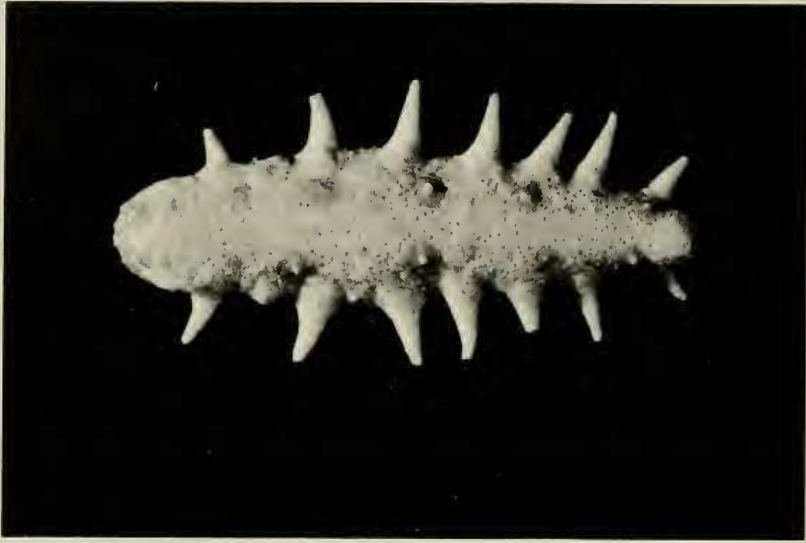


Fig. 1. *Loisettea amphictena*, live specimen, total length 70 mm, dorsal view.

FRV *Peron*, 1 specimen; 676-82, 38 nautical miles north of Port Walcott, Western Australia, 19°59'S, 117°16'E to 20°01'S, 117°16'E, 52-50 m, 15 Apr 1982, silty sand and bryozoa, triangle dredge towed for 15 minutes, L. Marsh on *Soela*, 1 specimen; 677-82, 36 nautical miles north of Port Walcott, Western Australia, 20°01'S, 117°08'E to 20°00'S, 117°10'E, 50 m, 16 Apr 1982, silty sand and large

Table 1.—*Loisettea amphictena*: Disposition and numbers of papillae and radial tube feet.

Specimen	Length (mm)	Lateral papillae		Dorsal papillae	Other
		Left	Right		
AM J14287	94	9	8	4 per radius	1*
AM J14283	80	7	8	6-8 per radius	—
AM J14288	92	5	6	absent	—
WAM 54-63	56	7	6	6-8 per radius	—
WAM 70-63	77	7	9	4 left, 5 right	—
WAM 96-63	40.5	9	7	4 per radius	2*
WAM 330-71(1)	91	7	7	absent	3*
WAM 332-71	96.5	7	6	—	—
WAM 676-82(1)	63	6	7	3 left, 4 right	4*
WAM 677-82(1)	72	8	9	5 left, 7 right	—
BM(NH) 1892.1.16.99	53	—	—	—	5*
BM(NH) 1892.1.14.269-71	56	6	5	—	—
BM(NH) 1892.1.14.269-71	36	7	5	—	—

1* tube feet in single row in lateral ventral radii, in double row in midventral radius.

2* ventral tube feet in single rows in ventral radii.

3* tube feet in irregular single row in each lateral ventral radius, in 2-3 rows in midventral radius.

4* tube feet in single row in each lateral ventral radius, 15 feet per row; in midventral radius 29 feet in zigzag single row (or 2 scattered rows).

5* tube feet in single row in each lateral ventral radius, 13-14 feet per row; in midventral radius approximately 20 feet scattered in single row.

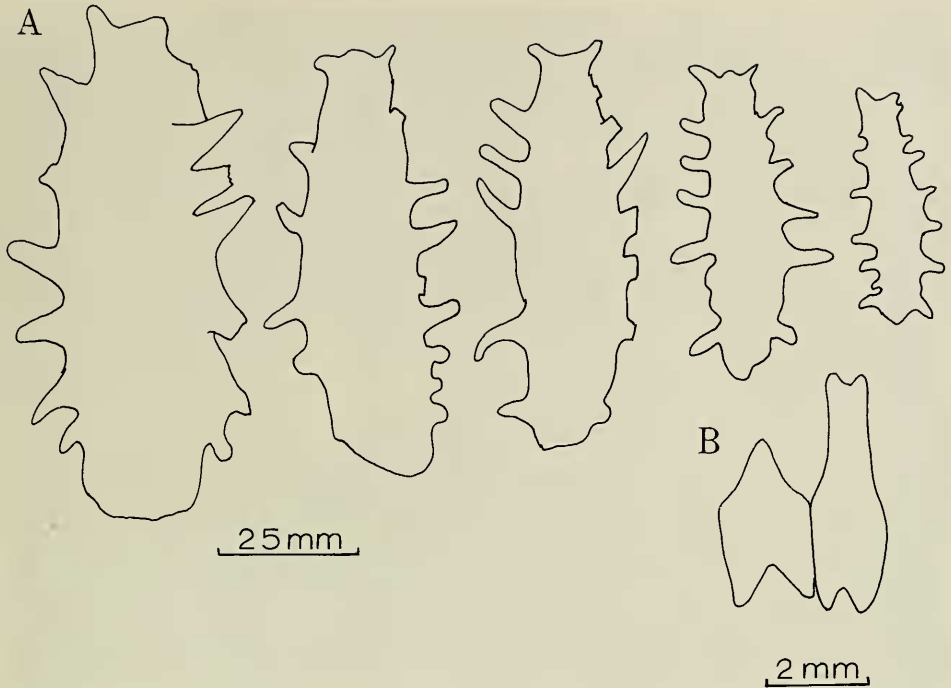
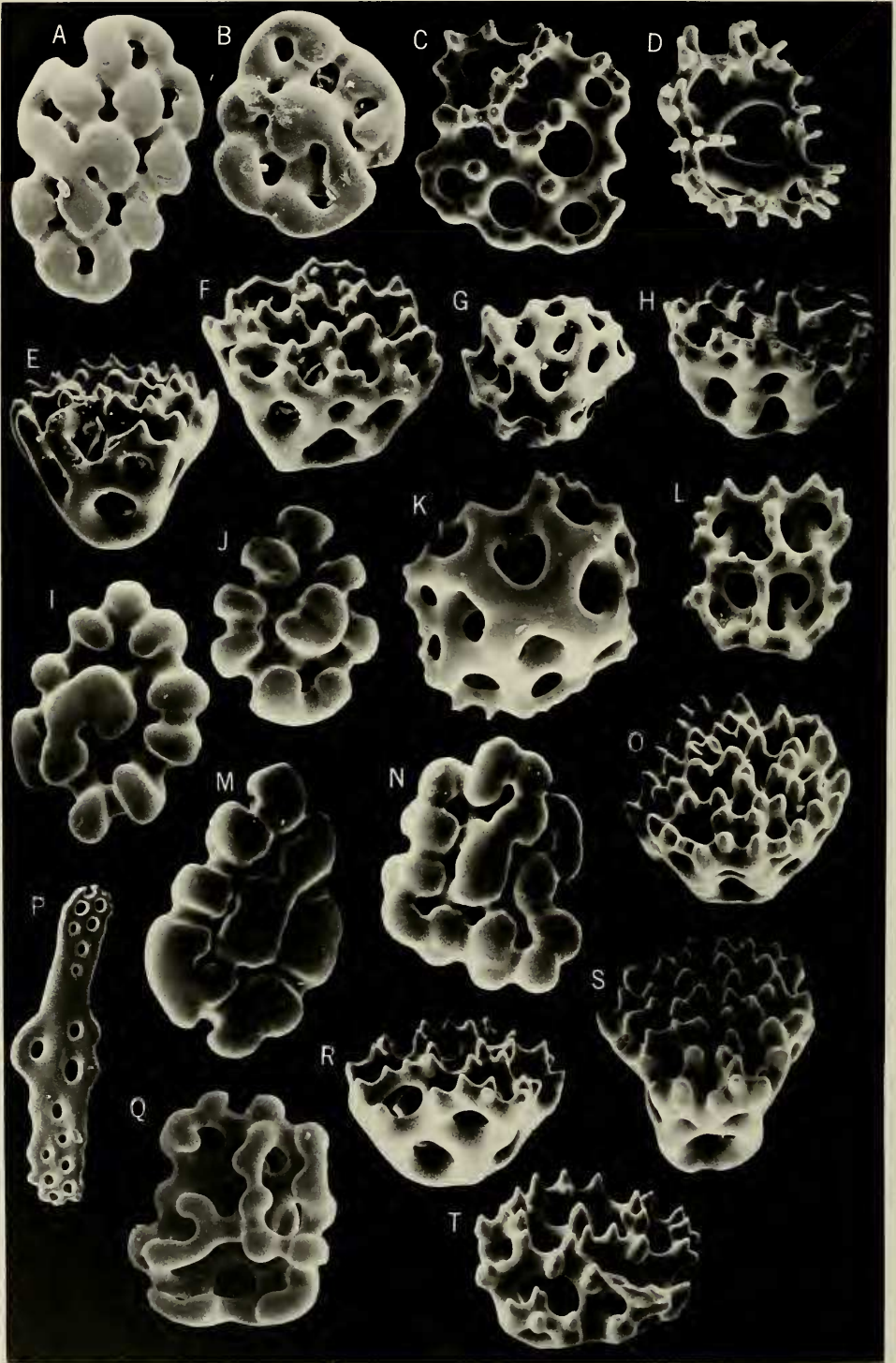


Fig. 2. *Loisettea amphictena*. A, Outline drawings of preserved specimens, ventral view. Holotype is at top left. B, Radial (right) and interradial (left) pieces of calcareous ring.

sponges, Engel trawl towed for 30 minutes, L. Marsh on *Soela*, 1 specimen. Additional material examined (not type-material): British Museum (Natural History): 1892.1.16.99, no locality, presented by The Admiralty, 1 specimen; 1892.1.14.269–71, Holothuria Bank, off Cape Londonderry, Western Australia, presented by The Admiralty, 2 specimens.

Description.—Body 36–96.5 mm long, approximately 4–5 times as long as broad, often quadrangular in cross-section, slightly flattened, tapering slightly anteriorly and posteriorly. Ventral margins with conspicuous conical lateral papillae (Figs. 1, 2A), 5–9 in each radius (see Table 1), longest papillae approximately 15 mm. Dorsal radii either unadorned or with up to 8 inconspicuous to prominent dorsal papillae. Body wall rigid, coriaceous, in larger specimens approaching 2 mm in thickness in midventral interradius. Oral area covered by 5 radially placed more or less conspicuous triangular oral valves. Ventral radii with scattered conspicuous tube feet (see notes to Table 1). Feet not extending to anterior and posterior extremities of radii, ending approximately 1 cm short of extremities; ventral and dorsal interradia with scattered smaller tube feet. Color in life more or less uniform orange-red, bases of dorsal papillae brick red. In alcohol, color fading to uniform dirty white.

Radial longitudinal muscles poorly developed broad thin straps. Two Polian vesicles. Gonad consisting of tufts of light orange unbranched tubules. Internal surface of body wall on ventral side having large holes for tube feet in radii and smaller holes for tube feet in interradia. Calcareous ring of 10 simple pieces (Fig.



2B) lacking posterior projections. Radials elongate, anterior projection with shallow notch. Interradials with bluntly pointed anterior projections.

Ossicles in body wall large multi-layered scales (lenticular plates) overlain by complex cups and by buttons of varying complexity. In larger specimens (WAM 330-71, total length 91 mm), oval to circular scales can reach diameter of 5 mm in dorsal and ventral body wall. Dorsal buttons 80–220 μm in length (Fig. 3A–B), simply knobbed, but often with more or less well developed secondary network of calcite, making them double-layered. Ventral ossicles tend to be smaller than dorsal. Ventral cups (Fig. 3H) average 69 μm in width and 56 μm in height, ventral buttons (Fig. 3I) approximately 90–150 μm in length. In smaller specimen (WAM 96-63, total length 40.5 mm), ossicles generally smaller and less complex; dorsal and ventral ossicles identical. Cups (Fig. 3D, 3K–L) average 63 μm in width and 47 μm in height. Buttons (Fig. 3C, 3J) greatly variable in size. Lateral papillae of larger specimen contain cups (Fig. 3O, 3S) and buttons (Fig. 3M–N) similar to those occurring elsewhere in the body wall. In smaller specimen, the cups (Fig. 3R, 3T) and buttons (Fig. 3Q) also similar to those from elsewhere in body wall, and simpler than their counterparts from larger specimens.

Distribution. — Currently known only from the continental shelf of northwestern Australia, where it ranges from Shark Bay to the vicinity of Darwin, in depths of 18–78 meters. The species has usually been collected from a silty sand bottom, where large sponges and other echinoderms are common.

Literature Cited

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Fig. 3. *Loisettea amphictena*, body wall ossicles from large (91 mm total length) and small (40.5 mm total length) specimens: A, B, Dorsal buttons from large specimen, $\times 280$; C, Dorsal button from small specimen, $\times 390$; D, Dorsal cup from small specimen, $\times 780$; E, F, Dorsal cups from large specimen, $\times 450$; G, Dorsal cup from large specimen, $\times 280$; H, Ventral cup from large specimen, $\times 390$; I, Ventral button from large specimen, $\times 390$; J, Ventral button from small specimen, $\times 340$; K, L, Ventral cups from small specimen, $\times 560$; M, N, Buttons from lateral papilla of large specimen, $\times 280$; O, Cup from lateral papilla of large specimen, $\times 360$; P, Rod from ventral body wall of small specimen, $\times 220$; Q, Button from lateral papilla of small specimen, $\times 560$; R, Cup from lateral papilla of small specimen, $\times 420$; S, Cup from lateral papilla of large specimen, $\times 450$; T, Cup from lateral papilla of small specimen, $\times 420$.